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cc

bcc

Subject SGR Project -- Biological Assessment

Rini and Jaya -- Please find attached a copy of the Biological Assessment that was prepared for USFW in 2001 in connection with the quarry project and the proposed rail line. This copy of the Assessment has been redacted (very modestly) to eliminate certain commercially sensitive information concerning the quarry project. Further, we will hand deliver to you, Rini, and Federal Express to you, Jaya, those figures and photos that are referenced in the Assessment and which do not contain any commercially sensitive information.

Please let me know if you have any questions. Regards. David

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BIOLOGICAL ASSESSMENT

PHASE I
MEDINA COUNTY PROJECT

Submitted by:

Vulcan Materials Company

October, 2001

Phase I
Medina County Project
Biological Assessment

INTRODUCTION

The proposed Medina County Project is located approximately 5 miles north of Quihi, Texas in north central Medina County. Vulcan Materials Company (Vulcan) is currently evaluating the project in terms of economic and environmental feasibility. The proposed project would involve a multi-phased development and operation of a limestone quarry and associated crushing and screening facilities for the production and sale of construction aggregates for the building of roads, bridges, and other related construction industry needs. Due to the nature of the business and the size of the property involved, the project area has been broken into five (5) individual phases, with each phase representing an Environmental Survey Area. The Environmental Survey Areas include those areas proposed for the facility maintenance area, the production facility area, the mine area and the environmental management and buffer areas. Additional areas are currently being evaluated for a proposed rail alignment. The specific rail alignment has not been identified at this time and will not be fully delineated until access agreements have been obtained. The rail spur will be included in Phase II for the proposed project. Vulcan has obtained leased land in excess of that needed for the mining operation and is in the process of obtaining excess rail right-of-way so that adequate lands are available to allow avoidance of sensitive environmental resources and for adequate buffer areas between mining and transportation activities and those resources. Over the conceivable life of the project, implementation of each of these phases will be based upon market demands and completion of environmental surveys and any potential mitigation plans. In addition to these plans, other factors that will impact the implementation of the project phases include: availability of limestone reserves, construction suitability, access availability, and avoidance of environmental and cultural resources. Vulcan's ultimate goal is to develop an environmentally compatible project with net improvement in the local environment.

This report and assessment focuses on the initial phase of the project (Phase 1 Environmental Survey Area) as well as the establishment of baseline environmental and screening information for the entire project including all phases (Phase 2-5 Environmental Survey Areas). Using this approach, adequate data and stakeholder input can be collected to develop an overall environmentally protective project with specific data needs being developed in each Phase. Based upon the elements defined above, similar detailed assessments for the future phases will be performed at times when the field observations and studies are closer time-wise and consequently more relevant to the actual implementation of that particular phase. Vulcan, through its environmental management team, plans to continue focused environmental surveys on the initial Phase I Environmental Survey Area (receiving focused survey in 2001) and will extend those focused surveys into the remaining Phase I Environmental Survey Area. Screening

level surveys will be continued on the Phase 2-5 Environmental Survey Areas. These survey efforts will be conducted primarily in the March-May, 2002 time frame to coincide with the U.S.F.W.S. sanctioned survey protocols for Golden-cheeked warblers and Black-capped vireos as well as the optimum flowering period for the Bracted Twistflower and the Texas Mock-orange. These surveys will be conducted to confirm the survey results collected in the 2001 survey effort and to provide detailed survey data on the remainder of the Phase I Environmental Survey Area. Additional site-specific focused surveys are anticipated in the Phase 2-5 Environmental Survey Areas identified as exhibiting potential T&E or sensitive species potential habitat or sightings. Using this approach, several years of data on potential species habitat and occurrence will be available prior to initiation of subsequent Phases of the project assuring that potential habitat is identified and protected precluding the potential for "taking" threatened and/or endangered species.

Based upon the geology of the site and preliminary exploration studies performed at the site, areas within three separate but contiguous parcels could yield substantial quantities of high quality construction aggregate materials. In addition to the potential for yielding aggregate, each of these parcels includes areas that could be utilized for buffer zones, greenbelts, habitat conservation and enhancement, and potential mitigation areas. Consequently, the size of the properties involved is not simply a function of how much product they may yield, rather, the size of the properties allows for greater flexibility in the development of the environmental plans. Much of the project area will not be disturbed and will be managed to improve the habitat value in the area.

A major portion of the project site (that being the quarry area) lies over the Edwards Aquifer Recharge Zone within the rocky and hilly terrain of the Edwards Limestone (Devil's River Limestone equivalent) with the southeastern corner extending into the transition zone. The rail corridor to the south of the project area overlies Quaternary gravels and shales, stratigraphically over a thousand feet above the Edwards Aquifer, and principally across flat lying agricultural areas and mesquite pasture. Information in this report represents a comprehensive multi-phased fifty-year plan, the actual implementation of which will be based on market demands and completion of environmental surveys.

As indicated previously, this report focuses on the Phase I Environmental Survey Area. The proposed buffer areas (outlined in blue) have been established to protect drainage and riparian habitat and to provide habitat corridors through the project area to adjacent habitats. Phase I of the project would consist of construction of the Production Facility that would include establishment of the plant crushing site and the opening of quarry area #1.

The Plant maintenance facility and fuel storage area would be located off the Edwards Recharge Zone on the transition zone. Only the amount of fuel and lubricants required for short-term operations would be maintained at the site and all storage tanks and drums will be placed in secondary containment facilities in accordance with all local, state, and federal requirements. The material generated from this project would consist of crushed limestone principally for use in making readymix concrete, asphaltic paving material, and road base materials. The mining operation would involve modern blasting and conventional mining techniques. Explosive

material components (typically ammonium nitrate and diesel) used in the blasting would be brought in by outside contractors with no onsite bulk storage of explosive material. Explosives will be consumed in the detonation and any residues would be removed with the excavated limestone materials. Periodic groundwater monitoring will be conducted to assure that the shallow groundwater is not being affected by mining operations.

In April, 1999 Vulcan assembled a team of environmental experts to assess the potential environmental and cultural resources at the site, potential environmental impacts from mining operations, avoidance and mitigation plans as well as wildlife habitat improvement projects to compensate any losses. Horizon Environmental Services, Inc., of Austin, Texas, was contracted to conduct biological and threatened and endangered species surveys.

Vulcan's ultimate goal is to develop an environmentally compatible project with net improvement in the local environment. The team is to evaluate an area of over 1,720 acres as well as any potential impacts to surrounding areas. The total leased land area is far more than required for the proposed project, however, as stated earlier, having such a large tract of land allows for evaluation of alternate project features, buffer areas, mitigation areas and habitat enhancement areas. To accomplish the goal of developing a model environmental project, Vulcan proposes working closely with both the regulatory and public stakeholders.

SETTING

The project area is located in the northeastern corner of Medina County south of Medina Lake. In the county, farming and ranching are the major enterprises with over 633,000 acres being used for cattle grazing and approximately 213,500 acres being used for crops. Farming is typically dryland with less than 32,000 acres under irrigation. Typical crops include, grain sorghums, small grains, corn, cotton, peanuts and improved pasture. Irrigated crops include vegetable and truck crops. Irrigation water is taken from deep wells in the Edwards Limestone formation or Carrizo Sands formation and also from Median Lake. Medina County has some oil and gas exploration in the southeastern part of the county but no wells are located on the project site.

The project, Environmental Survey Areas (Phases 1-5), is used primarily for cattle grazing with a few scattered agricultural fields. The proposed rail alignment has deeper soils that support more agriculture fields.

Horizon Environmental Services, Inc. biologists characterized the project area (support facilities and quarry site-Environmental Survey Areas Phases 1-5) as typical second growth South Texas rangeland vegetation on the uplands with a denser woodland component in the drainages. In the uplands, dominant canopy species include mesquite (*Prosopsis glandulosa),* live oak *(Quercus fusiformis)*, huisance (*Acacia farnesiana),* and coma (*Bumelia lanuginose*). Ground species include prickly pear (*Opuntia lindheimerii),* plantain (*Plantage* ssp.), bluebonnet (*Lupinus texensis*) and various wildflower species. The drainages exhibit a denser woodland component composed of Ashe juniper (*Juniperus ashei)*, hackberry (*Celtis laevigata),* and live oak *(Quercus fusiformis)*. Ground species include agarita (*Berberis trifoliolata),* greenbriar (*Smilax bona-nox),* devil's shoestring (*Nolina texana),* twisted-leaf yucca (*Yucca rupicola)* and various wildflowers

and forbs. The entire project area has been used primarily for cattle grazing with small areas being used for hay and other crop production.

The Creeks located on the project site flow only for a very short period after rainfall events. Surveys indicate that no standing water remains within several hours after rainfall events in the creeks on the proposed site.

Phase I Environmental Survey Area: The southern portion of the Phase I area includes the plant maintenance facility and fuel storage area which is predominantly cultivated area bordered to the south by rangeland. The dry creek drainage is proposed as a buffer and management area. The production facility area is dominated by upland rangeland vegetation and is bordered to the north and to the west by Creek drainage and to the south by the agricultural lands and the proposed plant maintenance facility. Both drainages are characterized by the denser woodland component. Both drainages are proposed as buffer and management areas. The initial quarry would begin in the upland area north of the Creek buffer area and would extend north into the Phase I Environmental Survey Area as reserves are mined. The entire mining area within the Phase I Environmental Survey Area is dominated by heavily grazed upland South Texas rangeland.

Phase II Environmental Survey Area: The Phase II project area is dominated entirely by heavily grazed South Texas upland rangeland. The area is bordered to the west by Creek Drainage and to the south by an unnamed drainage. Both drainages are proposed as buffer and management and are dominated by the denser woodland component.

Phase III Environmental Survey Area: The Phase III area is dominated by the heavily grazed South Texas upland rangeland. The area is bordered to the west by the Elm Creek drainage that is dominated by the denser woodland component. Several areas have, in the past been selectively cleared of woody vegetation. The Elm Creek drainage is proposed as buffer and management area.

Phase IV Environmental Survey Area: The Phase IV area is dominated by the dense woodland component in the northern portion. This area has several smaller drainages that merge into an unnamed tributary of Creek. This area supports a dense growth of mesquite and mature junipers and as such may offer potential management area to improve habitat for Golden Cheeked Warblers. Screening level surveys did not reveal presence of Golden Cheeked Warblers but the area has been mapped as potential habitat and as an area to receive intense survey in future survey seasons. To the south, the area is characterized by a fairly dense second growth South Texas upland rangeland vegetation. On the southern end, the area is bordered by Creek. A large area, adjacent to the Creek drainage, has been cleared for agriculture. Both drainages are proposed as buffer and management areas.

Phase V Environmental Survey Area: This area is dominated by South Texas upland rangeland. It is bordered on the east, west and south by unnamed drainages that are proposed as buffer management areas. The drainages do not support the density of woodland vegetation found in the other drainages.

GEOLOGY/SOILS

The project is located in the north central portion of Medina County, Texas. The proposed quarry site exists within the outcrop portion of the Cretaceous Devil's River Limestone (Kdvr). This unit is equivalent to the Cretaceous Edwards Limestone (Ked) and represents only a nomenclature change and for the purposes of this report the names are used interchangeably. Like all Edwards Limestone quarries in south and central Texas, this quarry is located within the Edwards Aquifer Recharge Zone. In general, in this area, the land surface is extremely rugged with abundant rock outcroppings consisting of chert and limestone. In some areas, a thin layer of black or red clay rich soil, typically less than a foot thick, supports modest ground vegetation. In the approximate center of the proposed quarry area, alluvium is found in the Creek basin but no hydric soils have developed. The actual mineable thickness depends on a variety of factors including mine safety practices, operational and quarry design considerations, as well as the nature and level of the market demand.

Because of the limestone's physical properties (relative strength, durability, and chemistry), the Edwards Limestone has been and will undoubtedly continue to be a primary source of construction aggregate material. Limestone from the Edward's formation is used in all large and small metropolitan areas in south, central, and east Texas, including San Antonio, Austin, Houston, and to some extent, even Corpus Christi and the valley portion of Texas.

Moving immediately south of the proposed production facilities and quarry area, a major northeast / southwest trending fault exists. South of this fault line, the depth of the Edwards Limestone increases dramatically. It is reported that at a distance of approximately ½ mile south from this fault line, the Edwards Limestone is over 1,000 feet below surface.

In early August, 2001, Lynn Post, of the Medina County Natural Resources Conservation Service, stated that the only hydric soil class in the project areas (from the proposed quarry and plant site location as well as the area of the proposed rail line) would be the Tiocano series (To) that are poorly drained and found on uplands over clayey materials. This soil series was not identified on any of the proposed project areas. In general, the proposed site is dominated by the Tarrant-Rock outcrop association (TAD), Tarrant-Rock association-hilly (TAF), Real association (RED), Dina association (DNC), with small areas of Mercedes clay (McB), Tarrant and Speck soils (TeD), Topia clay (TpB). Kavett-Tarrant association KAD) can be found in the creek beds on the project area. Divot clay loam (Dp) is not found until the creek approaches the Edwards transition zone south of the project site.

The soils found along the proposed rail alignment are predominantly characterized as the Knippa-Mercedes-Castroville association. These soils are relatively deep, nearly level to gently sloping, loamy and clayey, calcareous soils suitable for agricultural cropping. Isolated Tiocano series soils can be found in depressions and areas of poor drainage. Review of aerial photographs, topographic maps and soils maps indicate that a rail alignment can be selected that will avoid jurisdictional wetlands and any other potential sensitive habitat.

SITE INVESTIGATIONS

Site visits were conducted in July, August and September (2000) as well as in April, May, June and July (2001). During these visits virtually all of the areas within the leased land boundaries were walked. The terrain can be best described a rugged to rolling hill country dominated by cedar and oak woodlands. The area has been heavily grazed. Most shrubs exhibit elevated browse lines from domestic livestock and wildlife. Aerial photographs were taken and have been used to identify potentially sensitive habitats, avoidance areas and potential areas for habitat mitigation. The maps have been ground verified during field surveys. Vulcan technical experts met with Ms. Mary Orms and Mr. Ray Brown of the U.S.F.W.S. Austin Ecological Services Office on April 16, 2001 to discuss the endangered species survey strategy. Technical Experts visited the site to map potential T&E and sensitive habitats on April 9, 2001. During the months of April and May, 2001 numerous site visits were made to survey for T&E species and sensitive species by Dr. Rogers and Horizon Environmental Services, Inc., endangered species specialists using U.S.F.W.S. sanctioned survey techniques. As discussed with the U.S.F.W.S. the project surveys focused on the Phase I area to identify potential occurrence of Golden-Cheeked Warblers and their habitat and other T&E species and habitat with screening level surveys of the remaining areas. Annual surveys are planned for the remaining project areas. Again the focus each year will be on identifying potential T&E species existence in those areas proposed for mining with screening level studies planned for potential future expansion areas. This will provide extensive survey data and opportunity to coordinate any planned construction with the U.S.F.W.S. prior to any brush removal or land disturbance. Vulcan has retained rights to significantly more land than is currently proposed for mining. This provides adequate land for an "avoidance first" approach to project planning and suitable land for mitigation of any potential T&E or sensitive species habitat.

The project description presents the maximum potential footprint of the proposed project and as such identification of final mining areas and transportation right-of-ways have not been identified. The team was able to drive the adjacent roadways and observe most of the corridors or to walk and observe other representative corridor habitat. Based on these observations and the use of U.S.G.S. 7.5 minute topographical maps and U.S.F.W.S. National Wetland Inventory Maps, we were able to characterized potential wetland areas as well as potential sensitive habitats. The status of each resource is as follows:

Wetlands

The Phase 1-5 Environmental Survey areas serve as a drainage basin but in most cases do not have the soil type, hydrology or vegetation to support "jurisdictional wetlands". The area has several drainages with narrow bands of woody vegetation. A plan is being developed to address "nonpoint source" runoff and recommendations for protecting the water quality in the Edwards Aquifer as outlined in the "U.S. Fish and Wildlife Service Recommendations for Protecting Water Quality of the Edwards Aquifer" dated June 9, 2000 as well as the restrictions imposed on

development on the recharge zone. The guidance specifies buffer zones based on drainage features and development type. The proposed buffer were developed to protect corridor vegetation and floodplain features as outlined in these determinations and requirements. Lists of hydic soils and plants from the U.S.D.A. Natural Resources Conservation Services Office located in Hondo, Texas, have been collected to support the jurisdictional wetland delineations. National Wetland Inventory maps of the project area that correspond to the U.S.G.S. 7.5 minute quadrangle maps have also been obtained to assist in the wetland delineations and identification of sensitive habitats. No "jurisdictional wetlands" were identified by Drs. Rogers and Brownlow in the Phase 1-5 Environmental Survey Areas.

The proposed rail alignment crosses deeper, gently sloping soils that can support Tiocano soils and small areas that can be characterized as "jurisdictional wetlands". Adequate easement will be obtained to implement an "avoidance first" approach to protecting wetlands and to provide for ample land for mitigation of any unavoidable losses. In the unlikely event that "jurisdictional wetlands" cannot be avoided, Vulcan will apply for the appropriate Clean Water Act, Section 404 dredge and fill permit from the U.S. Corps of Engineers (COE) regional engineer and his staff prior to any "jurisdictional wetland" disturbance.

Photograph 1: Drainage and adjacent vegetation

Photograph 1 shows a typical drainage and the adjacent vegetation in the Phase 1-5 Environmental Survey Areas. It should be noted that "jurisdictional wetlands" were identified, outside the proposed Phase 1-5 Environmental Survey Areas, in an area just below a point at which the proposed corridor crosses FM 2676. In the proposed rail alignment area, wetlands and jurisdictional wetlands have been identified and will be avoided in the final alignment and rail spur construction. Final wetland delineations are being confirmed with the COE regional engineer and his staff. Prior to initiation of Phase 1 activities, Vulcan will request a preconstruction conference to confirm that jurisdictional wetlands will not be impacted by the project. In the 404 permitting process, the COE requires that the wetlands be avoided if at all possible and if they cannot be avoided, the area of impact must be minimized as much as possible. In the unlikely event that these wetlands cannot be avoided, losses can be mitigated by wetland improvements in the same watershed and general area. Disturbance of jurisdictional wetlands, not related to this project, were evident in areas adjacent to the project area near FM 2676. By carefully selecting the rail alignment, these wetlands can be avoided entirely.

In meetings with Vulcan technical and design staff, project alterations and realignments were identified that resulted in complete avoidance of wetland areas in the Phase 1-5 Environmental Survey Areas as well as along potential rail alignments.

Any small unavoidable disturbances will be identified and through coordination with the U.S. C.O.E. will be addressed by agreed upon mitigation through wetland habitat improvement on and off the project site. A "wetland" awareness stimulated by the project could actually raise awareness of wetland values in the area and reduce the observed disturbances, unrelated to this project, in the wetland areas outside the project boundaries.

Federal Threatened and Endangered Species (U.S.F.W.S. Listing)

On June 15, 2000 the U.S.F.W.S. Austin Ecological Services Office provided Vulcan Materials, LP with a letter outlining potential T&E and other environmental considerations to be considered in the development of the Medina County Limestone Project. Vulcan had already initiated studies to address most of these concerns and reviewed its investigation approach to assure that all of the U.S.F.W.S concerns were being addressed. On June 4, 2001, Vulcan requested an updated species listing and requested initiation of informal consultation. On July 19, 2001 the U.S.F.W.S provided an updated species listing. A similar request was made for an updated species listing from the Texas Natural Resources Conservation Commission (TNRCC) Diversity Program. On July 30, 2001 the TNRCC provided a listing of state T&E as well as other species of concern. This "Biological Assessment" and project description has been prepared to fulfill the early consultation requirements for both agencies. Due to the phased approach to this project, it is anticipated that annual surveys and updates will be required and that the coordination and consultation process will be required as each phase is developed. It is anticipated that the project will fall under Section 7 of the Endangered Species Act due to required federal permits. While this is not a federal project, the federal agencies, such as the U.S. C.O.E will consider the issuance of permits, such as point and nonpoint discharge permits, as federal actions. Regardless of federal activity, Vulcan acknowledges that a Section 10 permit and the associated consultations would be required if "take" of a listed species is expected. "Take" is defined as to, "harass, harm, pursue, hunt, shoot, wound, kill, capture or collect, or to attempt to engage in any such conduct". It is Vulcan's intent to develop a project "not likely to jeopardize" listed threatened or endangered species and other sensitive species and habitats.

The FWS July 30, 2001 species listing identified the following species as potentially occurring in the project area:

Medina County Vertebrate Species- Two listed endangered birds are known to occur in Medina County and one is proposed for listing as follows:

Black-capped Vireo	*Vireo atricapillus*	*E*
Golden-cheeked Warbler	*Dendroica chrysoparia*	*E*
Mountain Plover (concern)	*Charadrius montanus*	

Karst and Cave Invertebrates- The following listed species have a high probability of occurring in Karst terrain (limestone formations containing caves, sinks or fissures):

Madla's Cave Meshweaver	*Cicurina madla*	*E*
Robber Baron Cave Meshweaver	*Cicurina baroni*	*E*
Braken Bat Cave Meshweaver	*Cicurina venii*	*E*
Government Canyon Bat Cave Meshwever	*Cicurina vespera*	*E*
Government Canyon Bat Cave Spider	*Neoleptoneta microps*	*E*
Cokendolpher Cave Harvestman	*Texella cokendolperi*	*E*
Ground Beetle (no common name)	*Rhadine exilis*	*E*
Ground Beetle (no common name)	*Rhadine infernalis*	*E*
Helotes Mold Beetle	*Batrisodes venyivi*	*E*

Edwards Aquifer (San Marcos and Comal springs) Species-The following springs and species are affected by water withdrawals from the Edward Aquifer and the resulting dewatering of the springs.

Comal Springs Riffle Beetle	*Heterelmis comalensis*	*E*
Comal Springs Dryopid Beetle	*Stygoparnus comalensis*	*E*
Fountain Darter	*Etheostoma fonticola*	*E*
Peck's Cave Amphipod	*Stygobromus (=Stygonectes) pecki*	*E*
San Marcos Gambusia	*Gambusia georgei*	*E*
Texas Wild-rice	*Zizania texana*	*E*
Texas Blind Salamander	*Typhlomoge rathbun*	*E*
San Marcos Salamander	*Eurycea nana*	*T*

TNRCC Species Listing

The July 30, 2001 TNRCC species listing identified the following listed Threatened, Endangered and Species of Concern, as potentially occurring is Median County:

Vertebrates

Edwards Plateau Spring Salamanders	*Eurycea sp*	
Valdina Farms Sinkhole Salamander	*Eurycea troglodytes*	
American Peregrine Falcon	*Falco peregrinus anatum*	*E*
Arctic Peregrine Falcon	*Falco peregrinus tundrius*	*T*
Black-capped Vireo*	*Vireo atricapillus*	*E*
Golden-cheeked Warbler*	*Dendroica chrysoparia*	*E*
Henslow's Sparrow	*Ammodramus henslowii*	
Zone-tailed Hawk	*Buteo albonotatus*	*T*
Frio Pocket Gopher	*Geomus texensis bakeri*	
Keeled Earless Lizard	*Holbrookia propinqua*	
Spot-tailed earless Lizard	*Holbrookia lacerata*	
Texas Garter Snake	*Thamnophis sirtalis annectens*	
Texas Horned Lizard	*Phrynosoma cornutum*	*T*
Texas Tortoise	*Gopherus berlandieri*	*T*

Plants

Bracted Twistflower	*Streptanthus bracteatus*
Texas Mock-orange	*Philadelphus texensis*
Sandhill Woolywhite	*Hymenopappus carrizoanus*

* Listing is duplicated in U.S.F.W.S. list
("blank" –rare but with no regulatory status)
T-U.S.F.W.S Listed Threatened
E-U.S.F.W.S Listed Endangered

Assessment Federal Threatened and Endangered Species (U.S.F.W.S. Listing

The following assessment focuses on the Phase I Environmental Survey Area. Discussion is also included on the screening level surveys and observations on the Phase 2-5 areas and the general area of potential rail alignment. These areas will be evaluated in detail prior to any activity in those areas. Baseline data has already been collected for these areas and will continue to be collected throughout the projected life of the project.

Medina County Vertebrate Species (U.S.F.W.S. Listing)

Black-capped Vireo (*Vireo atricapillus)*-Black-capped Vireo habitat does not occur in the Phase 1 and Phase 2-5 Environmental Survey Areas. The species is found in oak-juniper woodlands with a distinctive patchy, two-layered aspect, which consists of a shrub and tree layer with open grassy spaces. They require foliage reaching to ground level for nesting cover, and have been known to return to the same general area year after year. They feed on insects that thrive on deciduous and broad-leaved shrubs. Within the Phase 1-5 Environmental Survey Areas the vegetative mix, intense livestock and wildlife grazing of the 2-4 foot high shrubs has all but eliminated any suitable nesting habitat (**See Photograph 2**).

Photograph 2: Typical habitat resulting from extensive livestock and wildlife grazing.

Some potential marginal habitat exists for Golden-Cheeked Warblers along the drainage ways but the density of juniper (cedars) limits the habitat value to Black-capped Vireo Juniper removal, typically a recommended management option to improve the vireo habitat, would compromise the Golden-cheeked Warbler habitat. The area, as it exists today, has little, if any, habitat value for Black-capped Vireos. The buffer areas proposed for the project, if managed properly, could provide improved habitat and potential sanctuary nesting areas for Golden-cheeked Warblers but it is unlikely that any actions taken in this project would have either a positive or negative impact on Black-capped Vireos. Detailed surveys in the Phase I Environmental Survey Area and screening surveys of the Phase 2-5 Environmental Survey Areas were conducted in April and May, 2001, to confirm the habitat evaluation and did not reveal any vireos sightings or calls. If, during subsequent surveys, it is determined that there is some potential for vireo habitat, the habitat can be protected and avoided by establishing protective buffer and management areas. Based on previous assessments conducted by Dr. Loren Smith on Fort Hood, the birds seem quite tolerant of military activities and vehicle movement. Dr. Smith, working with the U.S.F.W.S. and TNRCC will provide management recommendations for the project.

Aerial photographs have been used to map the general area of potential rail spur alignments but these will need to be ground truthed in Phase 2 once access has been obtained. As discussed above, the rail alignment habitat is markedly different from that found in the Phase 1-5 Environmental Survey Areas. The area is dominated by deeper soils which support more intense agricultural. Any areas offering potential vireo habitat, if found, can be avoided and managed to improve habitat quality.

Golden-cheeked Warbler ***(Dendroica chrysoparia)***-The Golden-cheeked Warbler habitat is also limited because of past land practices. The warbler does, however, depend upon Ashe juniper/hardwood cover along steep slopes and canyons. They use long fine bark strips from the mature Ashe juniper trees as nesting material, so this species must have mature juniper trees in an area where it lives. Mature Ashe juniper and hardwoods areas have been identified and are found primarily in those areas proposed as buffer areas. Aerial photographs have been used to prepare "overlays' of the project site to determine areas of potential impact and suitable buffer zones. A 200' buffer zone along each side of the drainages has been proposed for the project. Detailed surveys of the Phase I Environmental Survey Area and screening surveys of the Phase 2-5 Environmental Survey Areas were conducted in April and May, 2001 by Horizon Environmental Services, Inc., and endangered species specialists of the Technical Team. No warblers were observed or calls heard.

Vulcan's technical team met with Ms. Mary Orms and Mr. Ray Brown of the U.S.F.W.S. Austin Ecological Services Office on April 16, 2001 to discuss the endangered species survey strategy. Technical experts visited the site to map potential T&E and sensitive habitats on April 9, 2001. During the months of April and May 2001 numerous site visits were made to survey for T&E species and sensitive species by Dr. Rogers and Horizon Environmental Services, Inc., endangered species specialists. The Phase 1 Environmental Survey Area was visited on April 9, April 16, April 24, April 29, May 4, May 9 and May 14, 2001. A total of over 64 hours of survey time was spent in the Phase 1 Environmental Survey Area. Numerous additional hours were spent in screening level surveys and in delineation of habitat and potential habitat on the entire Phase 1-5 Environmental Survey Areas. Technical experts will review the proposed project features and habitat maps and will provide recommendations of areas to be avoided and potential enhancement practices. In summary, while several small areas of potential habitat exist in the over-all project area (Environmental Survey Areas 1-5), the habitat value is significantly reduced due to livestock and wildlife grazing. Aerial photographs were used to map the proposed rail corridor but these will need to be ground truthed in Phase 2 once access has been obtained. The rail alignment habitat is markedly different from that found in the Phase 1-5 Environmental Survey Areas. The general rail spur area is dominated deeper soils that support more intense agricultural and little if any potential Golden-cheeked Warbler habitat.

Karst and Cave Invertebrates

The entire range of the above listed Karst species occurs in north and/or northwest Bexar County. The species and their habitat may be threatened by destruction of habitat by construction, filing of caves, increase in impervious cover, potential contamination from septic tank effluent, sewer leaks, runoff, pesticides and competition with nonnative fire ants and vandalism. Guidelines for determining whether or not a project or activity is likely to result in the take of these invertebrates is based on review of Karst zone maps prepared by George Veni (1994). In addition, James Cokendolpher is gathering published reports by George Veni and William R. Elliot including "Caves and Karsts of Texas" for further review. Veni defines five Karst zones that reflect the likelihood of finding Karst features that may provide habitat for the above listed species as follows:

Zone 1 – Areas known to contain the proposed endemic Karst invertebrates.

Zone 2 – Areas having high probability of suitable habitat for proposed or other endemic Karst invertebrates.

Zone 3 – Areas that probably do not contain proposed endemic Karst invertebrates.

Zone 4 – Areas that require further research but are generally equivalent to zone 3, although they may include sections that could be classified as zone 2 or zone 5.

Zone 5 – Areas that do not contain proposed or endemic Karst invertebrates.

A review of Veni's maps, indicate that the proposed project site is outside the mapped area. As such, the area does not have a classification. The team is currently obtaining more recent information from Veni that will support a classification of the project site. Several of the most recent reports have not yet been released. Vulcan's technical team is currently collecting this information and will also discuss the project location and features with Veni. Vulcan's technical experts walked the entire Phase 1-5 Environmental Survey Areas and did not find any inclusions, caves, sinks or fissures that would harbor the above referenced species. While these areas have Karst formations, they do not support the cave and fissure habitat similar to that found in Bexar County. Discussions with James Cokendolpher, confirms that due to the lack of these features there is little potential that listed Karst invertebrates exist in the area. Several faults and inclusion/caves exist on property adjacent to the proposed project site. The sites are approximately one mile from the proposed project site boundary and topographically up-stream of all project phases. Since the inclusions are upstream, there is no potential that surface flows can be altered by project activities subjecting the inclusions and the karst flora and fauna to flooding. Discussions with Vulcan engineers indicate that use of modern blasting technology virtually precludes potential for impact from blasting and quarry operations on these adjacent fissures and inclusions. Due to the proximity of the sites and the extent of the buffer area, it is unlikely that the proposed project will affect the above listed species. Vulcan is currently attempting to gain access to the inclusions on the adjacent property so that they can be monitored and protected to assure that any project related activities do not affect the integrity of the inclusions. James Cokendolpher has included Medina County on his collecting and survey permit in the event that surveys are required.

Vulcan proposes that during operations the identified features would be monitored for potential impact from its mining operations. Considering the distance of the inclusions from the blasting activities and the use of modern blasting technology, from an engineering and physics standpoint, it is unlikely that blasting would impact the inclusions or resident flora or fauna.

Edwards Aquifer (San Marcos and Comal Springs) Species (U.S.F.W.S. Listing)

In addressing potential impacts on these species, one must address the variety of mechanisms that support the quantity and quality of water coming from the Comal and San Marcos springs. Species within areas downstream of these springs can be impacted by the reduction in spring

flows as a result of heavy pumping of water from the Edward Aquifer during times of drought or other critical periods. Medina County, like many of the counties to its east and west (including Bexar County), relies almost exclusively on water pumped from the Edwards Aquifer. Any Edwards Aquifer water utilized in this project would be regulated by permit from the Edwards Aquifer Authority (EAA). The EAA's function is to oversee the protection, conservation, and utilization of the aquifer water and as a result, reduce the potential for negative impacts on the springs. As a result, Vulcan can only utilize that amount of Edwards Aquifer water that complies with the EAA's rules. Other potential sources of water for this project include surface water piped to the project site from the Medina Lake Irrigation Canal, the use of which could lessen the demand on the Edwards Aquifer.

The amount of water utilized in the project will be a function of the market demand and the resultant volume of material sold from the operations. Included within this estimate is Vulcan's utilization of extensive water re-use equipment and technology. In 2000, Vulcan Material's received an award for "Outstanding Water Saver of the Year – Big Business Category" from the San Antonio Water Systems, for using water re-use technology in its Bexar County quarry operations. Vulcan is the only aggregate producer in the area to utilize this water saving approach. Implementation of this technology resulted in Vulcan recovering as much as 75% of the water they would have otherwise lost. The same technology is planned for this project. Therefore, regarding Vulcan's potential use of water (pumpage) from the Edwards Aquifer, no impact on the species in the Comal and San Marcos springs would occur as a result of this operation.

Although the proposed project will utilize water in a variety of ways for the production of the materials (for dust suppression, material washing, etc.), the overall impact on water levels within the Edwards Aquifer could actually be improved as a result of this quarry operation. This could occur by potentially increasing the recharge to the aquifer via the quarry, which in turn could potentially benefit the springs. In fact, a variety of recharge enhancement projects could be evaluated which would conceivably allow water from Creek during heavy flood periods and at various flood stages to be directed into the quarry for direct recharge into the aquifer. An additional benefit in such a conceptual design would be to potentially lessen the economic losses resulting from downstream flood damage that has historically occurred during heavy rain events. The drainage basin for creeks are sparsely populated and undeveloped rural ranch land that could contribute high quality recharge water to the recharge zone. However, any efforts to enhance recharge in the quarries to improve recharge and potential T&E spring habitat will be pursued only with the involvement and cooperation of the EAA, the F.W.S., and the TNRCC.

Through extensive field observations and consultation with landowners, no sensitive recharge features have been identified in any of the five (5) Environmental Survey Areas on any of the other parts of the project site. As a result, there is no potential harm to the recharge effectiveness to the aquifer as a result of potential destruction of sensitive features, and consequently there should be no impact on the species within the Comal and San Marcos springs.

Regarding water quality, by design, the primary quarry locations exist in the topographically higher elevations of the project site. Because of this, only minor run-off water and water from

direct rainfall will enter the quarry locations (apart from any separately designed and approved aquifer recharge project). The only potential aquifer contaminant existing in the quarry operations is the relatively small amount of diesel fuel housed within the fuel tanks on the motorized heavy equipment. All major fuel storage areas are located outside of the quarry area in well regulated and controlled secondary fuel containment facilities. In the unlikely event of an accident resulting in a ruptured fuel tank on a piece of heavy equipment within the quarry operations, emergency spill clean up kits would be utilized to reduce any potential harm to the aquifer.

Quarry operations do involve the use of explosives. These explosives are a mixture of ammonium nitrate and diesel along with blasting caps. These components are brought into the quarry area and mixed together during placement within the shot holes. Upon detonation, these components are consumed during the explosion. Any trace and or minor residual components remaining from the explosion will be adhered to the broken aggregate that is transported out of the quarry. Using these practices and by exercising prudent mining approaches, including extensive environmental and safety awareness programs, it is unlikely that the proposed operations would have any negative impact on the Edwards Aquifer water quality and consequently any potential negative impact on the identified species in Comal and San Marcos springs. The project could have a small positive impact on the springs if recharge features are developed that could improve flow in the springs during critical periods.

Assessment Federal Threatened and Endangered Species (TNRCC Listing)

Medina County Vertebrate Species (TNRCC Listing)

Edwards Plateau Spring Salamander (*Eurycea sp)*- These are a troglobitic species which live in springs, seeps, cave streams, and creek headwaters. They often hide under rocks and leaves and are found in the Edwards Plateau area from near Austin to Val Verde County. A complete survey of the Phase 1-5 Environmental Survey Areas did not reveal any permanent or semi-permanent springs, seeps or other suitable habitat. The deeper soils, found within the general area of the potential rail alignment, do not provide Karst features suitable for this species. In addition, the project is setting aside the Creek drainages as buffer areas. The project is unlikely to have either a positive or negative effect on the species.

Valdina Farms Sinkhole Salamander (*Eurycea troglodytes*)- This is an isolated species, found in intermittent pools of a subterranean stream, which is located in Medina County. Valdina Farms is located at 29°29'39"N 99°22'49"W; at an elevation of 1,167 feet in the northwestern part on Medina County near the Uvalde County line. The Valdina Farms is topographically upgradient and not within the project area. The project is unlikely to have either a positive or negative effect on the species.

American Peregrine Falcon (*Falco peregrinus anatum*)- This raptor is generally not found in the proposed project area, but it is a potential migrant. The species nests in Tans Pecos area of Texas. The project buffer areas and improved habitat in those areas could have some limited

value to migrating Peregrine Falcons. However, the project is not expected to have either significant positive or negative affect on the species.

Arctic Peregrine Falcon (*Falco peregrinus tundrius*)- This bird is also a potential migrant, and all Peregrine Falcons should be treated as federally listed endangered species. The project buffer areas and improved habitat in those areas could have some limited value to migrating Arctic Peregrine Falcons. However, the project is not expected to have either significant positive or negative affect on the species.

Black-capped Vireo (*Vireo atricapillus*)- See above discussion (FWS Listing).

Golden-cheeked Warbler (*Dendroica chrysoparia*)- See above discussion (FWS Listing).

Henslow's Sparrow (*Ammodramus henslowii*)- These are wintering individuals usually found in weedy fields or cutover areas where bunch grasses occur along with vines and brambles. They must have bare ground for walking or running. There have been a few records within Medina county but it is unlikely to be found in the project area. The proposed quarry (Phase 1-5 Environmental Survey Areas) would be located in areas adjacent to the drainage basins but would not significantly disturb potent habitat for this species. It is thought that the establishment of the buffer zones and continuous corridors could slightly benefit this species by providing continuous margins of habitat that could allow establishment of some vine/bramble habitat. Removal of grazing and/or controlled grazing would also benefit the species. The habitat found in the general area of the potential rail spur alignments could provide potential habitat, however, heavy livestock grazing and intense agriculture limit the habitat value in most areas. Management of the rail spur corridors could provide improved habitat for this species.

Zone-tailed Hawk (*Buteo albonotatus*)- This species is found in arid-open country, including open deciduous or pine-oak woodland, mesa or mountain country and is unlikely to be found in the project area. They are often found near watercourses and wooded canyons or tree-lined rivers along middle slopes of desert mountains. They nest in a wide variety of habitat ranging from small trees in lower desert, giant cottonwoods in riparian areas, to mature conifers in high mountain regions. The proposed project corridors and buffer zones would provide improved habitat for this species. Controlled grazing would have a significant positive affect on the more arid high rangeland in the areas found in the Phase 1-5 Environmental Survey Areas. The project, once the habitat improvements are implemented, could have a net positive affect on the species in this area. It is unlikely that the rail spur corridor and management would have a significant negative or positive effect on this species. Management of the corridor could slightly improve habitat for prey species used by this raptor.

Frio Pocket Gopher (*Geomys texensis bakeri*)- These mammals are associated with nearly level Atco (AtA, AtB) soil. Atco soil is well drained and consists of sandy surface layers with loam extending to as deep as two meters. Atco soils are not found within the Phase 1-5 Environmental Survey Areas. A review of the soil maps of the general area of potential rail spur alignments also did not indicate the presence of Atco soils. Adequate soil type does not exist

within the project boundaries to support this species. It is unlikely that the project could have a negative or positive affect on the species.

Keeled Earless Lizard (*Holbrookia propinqua*)- This species is found in coastal dunes, barrier islands, and other sandy areas. They prefer to live in dry sandy places. They eat insects and small invertebrates, and lay their eggs underground March-September. Sandy, dune-forming soils are not found in the project area. It is unlikely the species could be found in the area and as such it is unlikely that the project will have a positive or negative affect on the species.

Spot-tailed Earless Lizard (*Holbrookia lacerata*)- This species is found in central and southern Texas and Adjacent Mexico in oak-juniper woodlands with prickly pear associations. The lizards prefer rocky desert flats, areas with sparse vegetation or mesquite-prickly pear associations, and the uplands of the Edwards Plateau. They lay their eggs underground and eat small invertebrates. The range maps prepared by the University of Texas College of Natural Sciences and Texas Memorial Museum do not show Medina County as having reported sightings. The habitat found the project area does not offer the open dry habitat preferred by the species. It is unlikely the species could be found in the area and as such there is virtually no significant negative affect on the species.

Texas Garter Snake (*Thamnopbis sirtalis annectens*)- This species is usually found in wet or moist microhabitats, but it is not restricted to them. They hibernate underground or under surface cover and breed March-August. Due to the lack of moist habitats the species is not expected to be found at the site. However, establishment of the buffer areas would protect any potential habitat and result in a slight improvement for the species.

Texas Horned Lizard (*Phrynosoma cornutum*)- This species is found in open arid and semi arid regions with sparse vegetation including grass, cactus, scattered brush, or scrubby trees. Soil varies from sandy to rocky. Prefers warm sandy, arid environments and is typically found in flat, open areas with little vegetation. They burrow into the soil, enter rodent burrows, or hide under rocks when inactive. They breed from March-September. Originally the species was seen throughout the state but numbers dropped dramatically. Declines have bee attributed to a variety of causes including; insecticides use, fire ants and habitat alteration. Today they are only seen in the western third of the state. The site offers marginal habitat for the species that would be disturbed by quarry operations. However, management of the buffer areas and protection from pesticide use could slightly improve the habitat for this species.

Texas Tortoise (*Gopherus berlandieri*)- Found in open brush areas with a grass understory. Open grass and bare ground are avoided by this species. When they are inactive, they occupy shallow depressions at base of brush or cactus, sometimes in underground burrows, or under objects. They usually live longer than 50 years. They are active March-November and breed April-November. The species depends on sandy soils for burrowing which are not found in the project area. It is unlikely that this species occurs in the project area.

Medina County Plant Species (TNRCC Listing)

Bracted twistflower (*Streptanthus bracteatus*)- Usually occurring in shallow clay soils over limestone, mostly on rocky slopes and in openings in juniper-oak woodlands. This plant flowers April-May. The species has been reported in other parts of Medina County coincidental to Golden-cheeked Warbler surveys. Survey periods for Golden-cheeked warblers coincide with the optimum flowering of this plant and none were observed in the April-May 2001 surveys in the Phase I-5 Environmental survey Areas. Clay soils are limited on the project site; however, the rocky slopes are found within the buffer areas that can be managed to optimize species diversity. The project has the potential to improve habitat conditions by reducing grazing in potential habitat. The species will be added to the annual April-May warbler surveys to identify any populations that can then be protected.

Texas Mock-orange (*Philadelphus texensis*)- This plant is found in limestone cliffs and boulders in mesic stream bottoms and canyons. This plant is usually found in shade of mostly deciduous sloped forest and flowers April-May. Mesic stream bottom habitat is limited in the project areas but there is a potential for the habitat within the buffer areas that will be managed to optimize species diversity. The project has the potential to improve habitat conditions by reducing grazing in potential habitat. The species will be added to the annual vireo and warbler surveys to identify any populations that can then be protected.

Sandhill Woolywhite (*Hymenopappus carrizoanus*)- This plant is found in open areas in deep sands derived from Carrizo and similar Eocene formations, including disturbed areas. It flowers late spring-fall. Deep sandy soils are not found in the project areas so it is unlikely that the species would be found in the area. The project is unlikely to have either a positive or negative affect on the species.

Antiquities-Texas State Historical Preservation Officer

Antiquities-Based on a records review, there are no registered cultural sites on the project area. Based on field visits, there is little likelihood that any major sites exist on the property. A 100% survey will be needed once access is obtained. Only small hunting sites are anticipated and there is little potential for large sites due to the historic lack of water in the area. Also, the shallow soils in the Phase 1-5 Environmental Survey Areas preclude the potential for significant buried cultural sites. Deeper soils exist in the general area of the potential rail spur alignment; however, agricultural tilling has disturbed much of the area. If sites are located they will be avoided if possible. If avoidance is not possible the sites will be documented and recovered artifacts will be documented and archived. Arrangements are also being made for one hundred percent surveys and for archival of any recovered artifacts. Once the rail alignments have been finalized and access agreements are obtained, a notification letter will be prepared for the State Historical Preservation Office describing the project, survey methods, notification protocol in the effect significant sites or resources are identified and archival arrangements.

SUMMARY OF PROJECT AND POTENTIAL IMPACTS ON PROTECTED SPECIES

Project Construction

Due to the long-term nature of the project, Vulcan proposes using a phased approach in developing the proposed quarry and processing facilities. The goal will be to develop an environmentally sustainable project that either does no harm or may actually improve over-all habitat and species diversity in the area. Vulcan has briefed the Edwards Aquifer Authority staff on this project and the potential viability of it eventually becoming a substantial recharge feature to the Edwards Aquifer. The EAA Staff and General Manager's only expressed concerns have focused on Vulcan's need to incorporate adequate protections against the potential for fuel spills over the recharge zone. Vulcan's approach will meet and or exceed all local, state, and federal regulations regarding the containment and protection of fuel supplies for the quarry and plant operations. All major fuel supplies for plant operations are to be located within secondary containment facilities constructed outside of the recharge zone and on the transition zone that lies to the south of the site.

One species, the Golden-cheeked Warbler, has recently been found in a variety of habitats, other than Ashe juniper/hardwood, so the U.S.F.W.S. does not currently allow the use of habitat surveys to determine presence of the species in a proposed disturbance area. Vulcan, through its consultants, have completed surveys on land which would be partially disturbed during the first year of the Phase I construction. The project would involve the establishment of a plant maintenance facility that would require previously farmed land that lies on the transition zone. All fuel facilities would be constructed with secondary containment meeting all Edwards Aquifer protection requirements. The production facility would require land that borders a Creek. A portion of this land was previously cleared for pasture by the landowner in excess of 20 years ago. All of the land within the proposed project site has been heavily grazed by domestic stock and wildlife. A 400' corridor has been set aside as a buffer zone/wildlife corridor. The corridor extends completely through the project site, offering both a north-south and east-west corridor. Extensive, U.S.F.W.S. sanctioned, Golden-cheeked Warbler surveys were conducted in the Phase I Environmental Survey Area. No warblers or calls were observed. While more than one years worth of survey data are desirable, Vulcan has voluntarily established corridors and buffer zones in those areas that could potentially be used as warbler habitat. By protecting these areas, Vulcan has assured that there is no potential to disturb potential habitat and to "take" the species. Annual surveys are proposed to determine if any warblers are present and if so to establish a population baseline. The project goal would be to improve habitat so that habitat for the warbler and other species of concern would be improved. Vulcan proposes that a "Phased Biological Assessment" be prepared based on the annual surveys and cumulative data collected in the screening level and site-specific surveys. Prior to any brush clearing or earth disturbing activities, U.S.F.W.S. sanctioned surveys will be completed and a full "Biological Assessment" be prepared. The Site Environmental Management Plan will be updated reflecting the U.S.F.W.S. and TNRCC recommendations as well as those of the Vulcan environmental management team.

A roadway will be required across the buffer corridor; however, the roadway is not expected to significantly impact the effectiveness of the corridor. The roadway will cross the corridor at a location selected by the planning and environmental management team as approved by the

U.S.F.W.S. and the TNRCC. It is estimated that the roadway would require less that 8,000 square feet. It should be noted that only a fraction of the Phase I area would be disturbed in the first year of operation. It is anticipated that the Phase I Areas would provide many years of quarrying operations before there would be a need to extend into the identified Phase II Environmental Survey Area. By conducting annual surveys well ahead of planned mining activities, Vulcan can identify potential sensitive habitat and species and avoid those areas. The areas would then be incorporated into the Site Environmental Management Plan.

Project Operation

The mining operation would consist of breaking the in-place limestone using engineered blasting. The broken limestone would then be removed by heavy equipment and transported to the Production Facility for crushing, segregation, washing, and transport preparation. Prior to the project start-up, discussions with appropriate county and state officials regarding routes and necessary road improvements will be held. Following these meetings, a transportation plan, defining precise routes, will be implemented. Within the mining operation, a variety of dust abatement techniques will be used during the mining and rock handling activities. Many of the elements within the crushing and screening circuits are wet systems and produce little dust. Water trucks will be used to spray quarry roads to reduce dust within the quarry. If nesting warblers, or other sensitive species, are identified mining activities can be modified to avoid disturbing those species.

Vulcan proposes that during operations, adjacent property karst inclusions be monitored for potential impact from its mining operations. Considering the distance of the inclusions from the blasting activities and the use of modern blasting technology, from an engineering and physics standpoint, it is unlikely that blasting would impact the inclusions or resident flora or fauna.

Vulcan, proposes to add two Texas listed species to the annual surveys, the Bracted Twistflower and the Texas Mock-orange. The project management, including managed grazing and the establishment of buffer zones should improve the habitat for these species. Baseline surveys will be conducted to monitor any improvements in population status and to identify additional management areas to be included in the site Environmental Management Plan.

Explosive material components (typically ammonium nitrate and diesel) used in the blasting would be brought in by outside contractors with no onsite bulk storage of explosive material. Explosives will be consumed in the detonation and any residues would be removed with the excavated limestone materials. Periodic groundwater monitoring will be conducted to assure that the shallow groundwater, and subsequently the Edwards Aquifer and any protected Edwards Aquifer species, would not be affected by mining operations.

Scheduled Continuing Surveys

Vulcan, through its environmental management team, will continue focused environmental surveys on the initial Phase I Environmental Survey Area (receiving focused survey in 2001) and will extend those focused surveys into the remaining Phase I Environmental Survey Area.

Screening level surveys will be continued on the Phase 2-5 Environmental Survey Areas. These survey efforts will be conducted primarily in the March-May, 2002 time frame to coincide with the U.S.F.W.S. sanctioned survey protocols for Golden-cheeked warblers and Black-capped vireos as well as the optimum flowering period for the Bracted Twistflower and the Texas Mock-orange. These surveys will be conducted to confirm the survey results collected in the 2001 survey effort and to provide detailed survey data on the remainder of the Phase I Environmental Survey Area. Additional site-specific focused surveys are anticipated in the Phase 2-5 Environmental Survey Areas identified as exhibiting potential T&E or sensitive species potential habitat or sightings. Using this approach, Vulcan will collect several years of survey data as well U.S.F.W.S. and TNRCC concurrence on management options on all areas prior to disturbance of any potential T&E and sensitive species habitat.

Vulcan proposes a close working relationship with the U.S.F.W.S. and the TNRCC in developing a Site Environmental Management Plan that demonstrates that wildlife diversity in the area can be maintained and even improved through responsible mining practices, planning, avoidance and management of sensitive habitats. Through this cooperative effort Vulcan envisions a showcase project demonstrating techniques that provide needed aggregate resources but at the same time protect potential endangered species habitat and species. Based on the above findings, cooperation of the U.S.F.W.S. and TNRCC, Vulcan is committed to including avoidance measures and management features into the project design to assure that the project is "unlikely to affect" federal or state threatened, endangered or sensitive species or their habitat.